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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

COHEN, JODI F

ART UNIT

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1791

MAIL DATE

DELIVERY MODE

12/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,619	Applicant(s) TAKADA ET AL.	
	Examiner Jodi Cohen	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 20-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 20-26 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

2. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

Group I, claim(s) 7-16, drawn to a method of making an expandable material using a one pack type curing paste starting material and said starting material.

Group II, claim(s) 20-26, drawn to an expandable product.

3. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special feature of Groups I is the specific viscosity characteristics of the one-pack type curing paste material. The special technical feature of claim II is the properties of the product. It is considered that the claims do not share the same special technical feature and thus have a lack of unity. Furthermore the special technical feature of Group I is known in the art as taught by reference US 4,778,631 which clearly discloses the hot-melt material containing viscosities within the ranges of those in applicant's claims.

4. Though US 4,778,631 is silent about the shear rate at these viscosities, the effect of shear rate on viscosity is a known relationship for shear thinning fluids and thus it would have been obvious to one of ordinary skill in the art through routine

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experimentation to alter the shear rate in order to achieve the desired high viscosities necessary for the method of claim 7.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 20-26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuda JP 06 198152 (cited here in Okuda et al. US 6,538,040 and referred to as '040 herein after) and further in view of Cobbs Jr. et al. (US 4,778,631) referred to as '631 herein after.

Regarding claims 7, 10, 14, '040 discloses a method for producing an expandable material using a piston pump (45A or 45B) having a cylinder (451) and a piston (452) adapted to reciprocally move within the cylinder to effect a suction stroke

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and a discharge stroke. '040 further discloses the method for producing an expandable material comprising the steps of:

supplying a gas at a pressure higher than that of the high-viscosity material it is being supplied to, wherein pressure of the gas supplied to the cylinder under a predetermined pressure by affecting the suction stroke is $0.1-5 \text{ kg/cm}^2$ (Col 6; lines 47-50)

discharging the foamed material from a dispersing pipe and;

operating the piston pump device via a control device (19) (Col3; line 34-Col 4; line 68);

supplying a high-viscosity paste material to the cylinder to mix with the low-pressure gas and produce a gas-mixed material. '040 does not disclose the composition or properties of the high-viscosity paste material however; '040 teaches using a hot-melt material such as that described in JP 63-264327 also published as Cobbs Jr. et al. (US 4,778,631) (Col 1; lines 43-46).

'040 discloses a piston pump and specifically teaches using a hot-melt material such as that in '631 thus it would have been obvious to one of ordinary skill in the art to use the hot-melt adhesive of '631 in the method discussed above because '040 specifically cites the use of the hot-melt adhesive described in '631.

It has been established that it would have been obvious to one of ordinary skill in the art to use the adhesive of '631 in the method of producing an expandable material as taught by '040, however '040 does not teach the specific viscosity and shear rate properties of the hot-melt material as defined in claim 7 of the present application.

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'631 discloses using a high viscosity hot melt thermoplastic material to produce an expandable, wherein the hot melt has high-viscosities ranging from 22 poises-400 poises, 500 poises to above 10,000 poises and is considered a one-pack-type curing paste material for use as an adhesive, sealant, coating, or gasketing material after being mixed and foamed, such as by the method and apparatus of Okuda (Col 4; line 58-Col 5; line 47). '631 clearly discloses the hot-melt material containing viscosities within the ranges of those in applicant's claims, unfortunately '631 is silent about the shear rate at these viscosities. However, the effect of shear rate on viscosity is a known relationship for shear thinning fluids and thus it would have been obvious to one of ordinary skill in the art through routine experimentation to alter the shear rate in order to achieve the desired high viscosities '040 specifies are necessary to operate with the piston pump to obtain a desired product.

Regarding claims 8-9, 11-13, in further view of the discussion above the method and apparatus of '404 is specifically for discharging a foamed hot-melt type adhesive product from the dispersing pipe by the use of curable polymers such as described in '631 (Col 1; lines 43-46 of '404 and Col 6; lines 5-53 of '631).

Regarding claims 15-16, '631 discloses a thermosetting material that can be cured by heat, a catalyst or other chemical means. A person of ordinary skill in the art would appreciate this to include vulcanization-crosslinking and photo/radiation-curable material, especially wherein '631 goes on to include examples of thermosetting, thermoplastic materials to include polyethylene, polypropylene, polybutylenes,

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polystyrenes, polyvinyl chloride, polyolefin, polyester, epoxy polymers, acrylic resins and specifically room temperature vulcanizing rubbers (Col 6; lines 20-52).

Response to Arguments

7. Applicant's arguments filed 9/9/2009 have been fully considered but they are not persuasive.

8. Applicant argues that Cobbs describes hot melt thermoplastic adhesives having high viscosities in the range of 50,000 to above 1,000,000 cps however Cobbs recites no shear rate thus the viscosities do not read on the present claims, thus even by using the material disclosed in Cobbs to produce an expandable material one would not necessarily obtain a foaming product having dense and uniformed closed cells according to the presently claimed invention.

9. As applicant states viscosity varies by shear rate depending on the material (p. 11 of applicant's remarks). However, the effect of shear rate on viscosity is a known relationship for shear thinning fluids. Additionally, Okuda teaches modifying the amount of gas and pressure as well as shear rate to obtain the desired foaming ratio (Col 10; line 39-Col 13; line 11) wherein the foaming ratio is representative of the density of the cells. It would be obvious to one of ordinary skill in the art in view of the known relationship for shear thinning fluids and the teachings of Okuda through routine experimentation to alter the shear rate in order to achieve the desired high viscosities Okuda specifies are necessary to operate with the piston pump to obtain a desired product with the desired foaming ratio. Thus one would not *necessarily* obtain the

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foamed product as claimed by the present invention however one of ordinary skill in the art would *expect* to obtain the same product and more importantly, one of ordinary skill in the art in view of the known relationships between shear rate and viscosity would be able to modify the pump as Okuda teaches such modifications to obtain the desired product.

10. Applicant argues the combination of Okuda and Cobbs, specifically stating Okuda teaches a piston pump with a gas supply and discharge whereas Cobbs teaches a disk-type apparatus which are completely different. Furthermore applicant argues hindsight in combining the references. The references were not merely combined without reasoning, nor was hindsight used. Okuda specifically teaches using the hot melt adhesive described in application JP 63-264327 which is also published as Cobbs Jr. et al. (US 4,778,631) (Col 1; lines 43-46) as stated in the rejection. It would be obvious to one of ordinary skill in the art to use the material Okuda teaches using within the invention taught by Okuda, thus no hindsight was used because the prior art specifically states this combination.

11. In further response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

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reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

12. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Specifically regarding applicant's argument that Cobbs requires a high pressure gas whereas the present invention requires a low pressure gas, applicant is again reminded that, while the teachings of Cobbs are taken as a whole, Cobbs is not relied upon for the teaching a method or apparatus for foaming a high viscosity material. Cobbs is relied on solely for the high viscosity material he teaches using, which Okuda teaches is suitable for use in his invention (Col 1; lines 43-46- Okuda).

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jodi Cohen whose telephone number is 571-270-3966. The examiner can normally be reached on Monday-Friday 7:00am-5:00pm Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jodi F. Cohen/
Examiner, Art Unit 1791
/ Carlos Lopez/
Primary Examiner, Art Unit 1791